

Final Review 2

- 1) Use the table below to answer the following questions.

Age	7	8	9	10	11	12	13	14	15
Height (cm)	119.3	127.0	132.0	137.1	142.2	147.3	152.4	157.5	162.2

- Give the domain and range for the set of data above.
 - Find the best-fit line for the data.
 - What are the real-world meanings of the slope and y-intercept for the equation you found in part b)?
 - Using your equation, what age would correspond to a height of 105 cm?
 - Discuss the correlation of age and height represented above.
- 2) Solve each equation or inequality. For every inequality, sketch a graph with your solution.
- $-6(2x - 10) + 12x \leq 180$
 - $3|4x - 1| - 5 = 10$
- 3) Write both the point-slope and the slope-intercept equations in function notation for the following points: $f(2) = -3$ and $f(-1) = 6$.
- Use either of your equations to evaluate $f(7)$.
 - Find x when $f(x) = 4$.
- 4) With a 20 mph wind there is a decrease in the perceived temperature of the air. At a temperature of 15°F , the approximate wind-chill temperature is -17°F . At a temperature of 30°F , the approximate wind-chill temperature is 4°F .
- If this is a linear relationship, write an equation to model the situation.
 - Give a real-world meaning for slope, y-intercept, and x-intercept.
 - What is the wind-chill temperature if the actual temperature drops to -14°F ?
 - What actual temperature will give a wind-chill temperature of 53°F ?

5) Solve for x.

a) $3x^4 = 768$

b) $3 + \log_6(x) = 5$

c) $(x-2)^{\frac{2}{3}} = 9$

d) $\sqrt{11x+3} - 2x = 0$

e) $3e^{2x+1} + 6 = 54$

f) $\ln\left(\frac{x+2}{5}\right) = 3$

6) Rationalize and simplify

a) $\frac{\sqrt{56x^5y^5}}{\sqrt{7xy}}$

b) $\frac{3+\sqrt{8}}{2-2\sqrt{8}}$

7) Iodine-131 is used to find leaks in water pipes. It has a half-life of 8.14 days. Write the exponential decay function for a 200mg sample. Find the amount of iodine-131 remaining after 72 days.

8) In the game of Yahtzee, on the first roll five dice are tossed simultaneously. What is the probability of rolling a Yahtzee (5 of a kind) on the first roll?

9) A bag contains 4 blue marbles, 6 red marbles, 5 black marbles, and 3 white marbles. Determine the probability of each scenario below if the marbles are replaced after each draw:

- P(red then black)
- P(2 whites)
- P(1 blue and 1 black in any order)
- P(red then white then blue)
- Determine the above probabilities if the marbles are not replaced after each draw.

10) Sixty percent of a company's sales representatives have completed training seminars. Of these, 80% have had increased sales. Overall, 56% of the representatives (whether trained or not) have had increased sales. Find P(increased sales | no training).

Answers to Algebra 2 Final Review 2 '0809:

- 1)
 - a) Answers will vary
 - b) Least-Squares $\rightarrow y = 5.24x + 84.30$
 - c) Slope \rightarrow On average kids grow 5.24 cm each year between the ages of 7 & 15.
y-int. \rightarrow A newborn baby would be 84.30cm long (not realistic).
 - d) about 4 years old.
 - e) The correlation coefficient is 0.9987, which is very good.
- 2)
 - a) All Real Numbers
 - b) $x = -1$ and 1.5
- 3) Point slope: $y = -3(x - 2) - 3$ or $y = -3(x + 1) + 6$
Slope intercept: $y = -3x + 3$
 - a) $f(7) = -18$
 - b) $f(-1/3) = 4$
- 4)
 - a) $y = 1.4x - 38$ or $y = 1.4(x - 15) - 17$ or $y = 1.4(x - 30) + 4$
 - b) Slope the perceived temp drops 1.4°F for every drop of 1°F in actual temperature.
The y-intercept is the wind-chill at 0°F .
 - c) $y = -57.6^\circ\text{F}$
 - d) $x = 65^\circ\text{F}$
- 5)
 - a) $x = 4$
 - b) $x = 36$
 - c) $x = -25$ and 29
 - d) $x = 3$
 - e) $x \approx 0.886$
 - f) $x \approx 98.428$
- 6)
 - a) $2x^2y^2\sqrt{2}$
 - b) $\frac{11 + 8\sqrt{2}}{-14}$
- 7) $f(x) = 200\left(\frac{1}{2}\right)^{\frac{x}{8.14}}$, after 72 days there will be $\approx 0.43\text{mg}$
- 8) $\approx 0.077\%$.
- 9)
 - a. $\approx 9.2\%$
 - b. $\approx 2.7\%$
 - c. $\approx 12.3\%$
 - d. $\approx 1.2\%$
 - e. $\approx 9.8\%, 1.9\%, 13\%, 1.5\%$
- 10) 20%